



KPMG Global tech report 2026: Industrial Manufacturing

Innovating Industry: The role of AI and
advanced tech in manufacturing's future





Foreword

The industrial manufacturing sector is undergoing a period of restructuring and transformation, driven by multiple factors in a rapidly changing and shifting world. Geopolitics and supply chain security are key factors, with industrial manufacturing becoming more closely linked to defence strategies and national resilience. Rare earths and advanced materials are a case in point, as is the space sector where manufacturing outside the confines of the earth is quickly moving from the realms of science fiction toward reality.

Technology is the key enabler for most of this, and industrial manufacturing businesses are making strong progress in embedding digital capabilities, including emerging technology such as AI into their enterprises. This year’s Technology Report shows that industrial manufacturing is one of the most mature of all sectors in terms of network and cloud infrastructure. It is pushing forward with purpose on AI, moving from proofs of concept to wider implementation. Overall, nearly half of the 258 industrial manufacturing C-suite and functional leaders surveyed report significant financial gains from their investments in technology.

Operational efficiency is the key focus for these investments, but enhanced cybersecurity is also a central concern in a threat-laden environment. Other benefits attendant on smart processes and next-generation production techniques will follow in time.

There are challenges, however. Data remains a battleground as industrial manufacturing businesses strive to get data out of its silos and flow it across the enterprise. This is needed for successful implementation of AI in particular. The realisation is evident that you can’t have good AI without good data.

Nevertheless, as we move into the Intelligence Age where technology is increasingly expanding the sphere of the possible, it is encouraging to see that industrial manufacturers are leaning into the challenge, investing appropriately and smartening their processes. The winners will likely be those that do this with clear strategic and business value alignment across the enterprise.

I hope that industrial manufacturing leaders will find our report full of practical insights into technology strategy, including our seven-point guide at the end on how to turn technology aspiration and intention into value.



Jonathon Gill
Global Head of Industrial
Markets & Aerospace
KPMG International

Key findings

1 Value creation, ROI and performance measurement

How technology and AI are expected to drive business outcomes



2 AI at scale: Operating model and collaboration

How organisations are structuring AI adoption and governance



3 Foundations, risk and technology enablement

The capabilities required to safely and effectively scale advanced technologies



Rising adoption of
**digital twins, edge computing,
and modern delivery practices**

Investing in technology to unlock business value and ROI

Eighty-seven percent of industrial manufacturing executives believe that advanced technology will drive future competitive advantage; half are already reporting significant financial gains.

The importance of continually investing in technology to upgrade systems, processes and ways of working is high on the minds of industrial manufacturing C-suite executives and functional leaders. Businesses in the sector are putting their money where their intentions are, investing significantly higher than the all-sector average in digital technologies, with 76 percent of IM respondents confirming that they are investing more than US\$50m compared to the 72 percent all-sector average.

Perhaps even more pertinently, organisations in the sector say that they are seeing the returns from this investment. AI and intelligent technologies are proving highly impactful, with 49 percent reporting significant financial gains or contribution (31–40 percent of total digital value realised).

In 2025, organisations show significant progress in scaling advanced technologies, with adoption rates rising across AI, cybersecurity, post-quantum cryptography and data analytics compared to 2024,

reflecting a clear trend toward maturity and resilience. Sub-sectors such as aerospace & defence and metals & advanced materials are leading this evolution, consistently reporting higher integration and scaling levels. The signs are that this is based on having solid technology foundations in place: 54 percent of industrial manufacturing executives believe they have mature network and cloud infrastructure, the second-highest figure across all sectors, only bettered by consumer & retail (55 percent).

Overall, 80 percent of industrial manufacturers report that technology frequently to very frequently improves the value generated from investments, even though cost pressures and technical debt continue to pose some challenges.

“Industrial manufacturers in markets across the world are prioritising investment in technology, as they also recalibrate their business models to take account of shifting global dynamics,” says Jonathon Gill, Global Head of Industrial Markets & Aerospace at KPMG International. “In markets where financial strategies and industrial strategies are aligning, we see some significant strides — as for example in the US where a whole new industry has effectively been erected around semiconductor production.”

“**Industrial manufacturers globally are accelerating technology investment while realigning business models to address shifting global dynamics.”**

Jonathon Gill
Global Head of Industrial Markets & Aerospace
KPMG International

Capital incentivisation

Alongside organisations’ own capital expenditure, another important dimension is government-led initiatives that create incentives for investment in digitisation and crucial infrastructure such as data centers to support computing demand.

An example of this is in India, as S Sathish, Partner and National Sector Leader, Industrial Manufacturing, KPMG in India reflects: “The Indian government’s announcement in Budget 2026 of long-term tax incentives on datacenter and digital infrastructure expenditure could act as an accelerator of digital transformation. This will likely invite interest from multinationals/foreign cloud service providers to partner in India’s digital transformation journey. For industrial manufacturing powerhouses like India, where digital penetration is lower in manufacturing unlike some of the international players, this incentivisation could increase the digitisation momentum.”

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S Sathish
Partner and National Sector Leader, Industrial Manufacturing
KPMG in India

What this implies:

Industrial manufacturers are already seeing some significant returns on their technology investments — and the early signs on AI and intelligent technologies are encouraging. However, solid technology foundations must be in place to capitalise on the potential, with technology debt as well as cost pressures presenting some challenges. Governmental incentivisation of investment could act as an accelerator in local markets.

Leading the march on AI

AI has become the technology poster child for businesses across industries and sectors, with huge potential to drive operational efficiency, production optimisation and smarter back-office working.

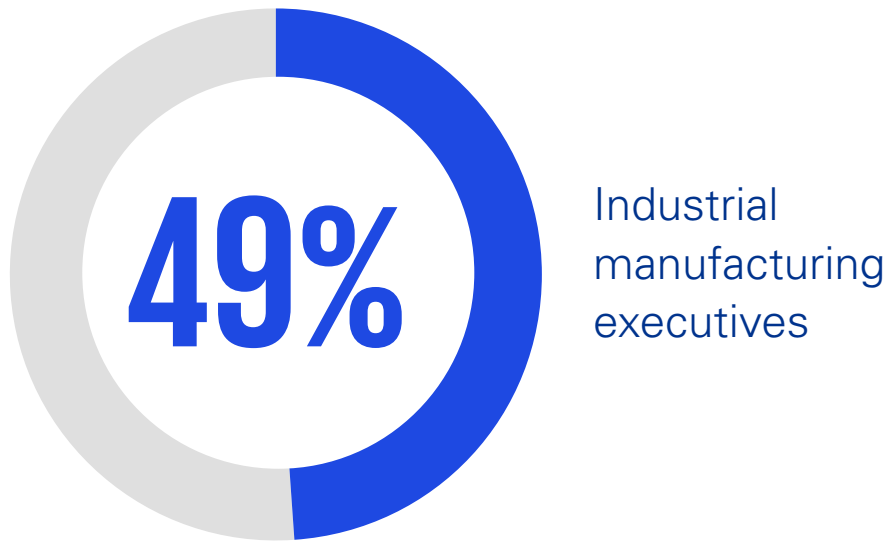
This is as true for industrial manufacturing as anywhere else, and organisations are embracing the possibilities with determination.

Nearly half

49%

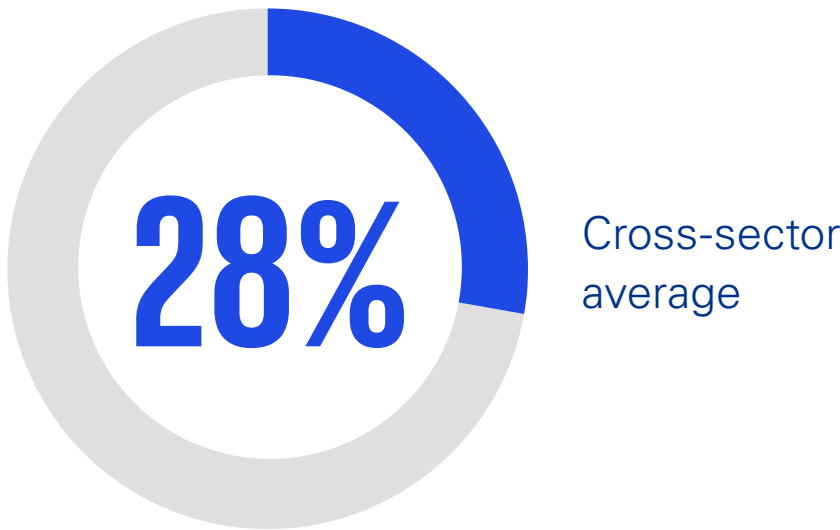
of executives report active deployment of AI use cases that are delivering business value, significantly higher than the cross-sector average of 28 percent, and an increase from 42 percent a year ago.

Active deployment of AI use cases that are delivering business value



There are numerous potential value-adding applications of AI across industrial manufacturing businesses: predictive quality control is the standout response in the survey (52 percent), followed by downtime reduction (40 percent) and generative AI for product customisation (38 percent). Other common or growing uses include predictive maintenance, commodity forecasting, supplier negotiation ‘buddy’ and more insight-driven support function working (finance, procurement, HR, sales, etc). Leading organisations are equally targeting both front and back-office transformation through generative and, increasingly, agentic AI embedded into systems and interfaces.

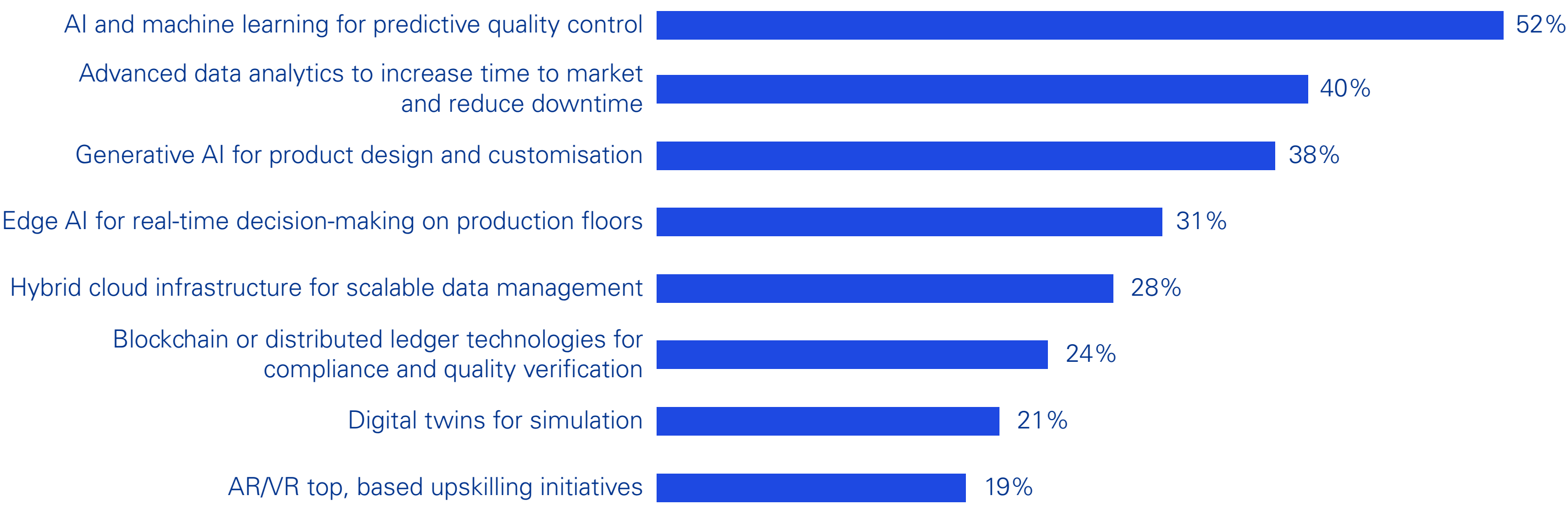
Nevertheless, the integration of AI into actual manufacturing processes themselves sits further back at the moment — given the downside risks in terms of cost, quality and reputation if problems are encountered.



On the operational side, it is perhaps the combination of AI with other technologies that holds the greatest current potential: AI’s ability to monitor and interpret signals from sensors, data from manufacturing circuits, or video footage from security cameras, for example.

“Acting as a powerful, multi-modal processing brain, AI can propel manufacturing environments toward a more predictive, dynamic and responsive operating model,” comments Martin Kaestner of KPMG in the US. “When run across and in conjunction with other technologies, it can be the catalyst to drive more innovation. However, organisations are learning that among the highest levels of success come when there is a minimum of customisation to their ERP and other core IT systems: keep your SaaS platforms as standardised as possible.”

Planned digital upgrades to production and R&D technologies (next 24 months)



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Martin Kaestner
Principal, Advisory
Industrial Manufacturing, Tech & Data Engineering
KPMG in the US

Defining effective AI governance and operating models

In terms of the governance model for AI, most organisations (70 percent) are taking a centralised approach, with the IT function leading implementation efforts. Different operating models for AI implementation are also emerging. Some organisations are leading with **functional use cases**, creating business cases in different functions of the enterprise and implementing them; others are adopting a **customer value stream** approach where enhancements are focused on the end outcome for the customer and then applied as appropriate across functions. Businesses are also pushing management and functional leaders to develop AI use cases for their areas so that efforts start at the top — with this being factored into performance criteria in some cases.

Cross-enterprise collaboration is also being recognised as critically important: 87 percent of leaders surveyed say that IT, security and risk teams are working closely together to ensure AI systems and use cases are deployed securely and are continuously monitored for risks.

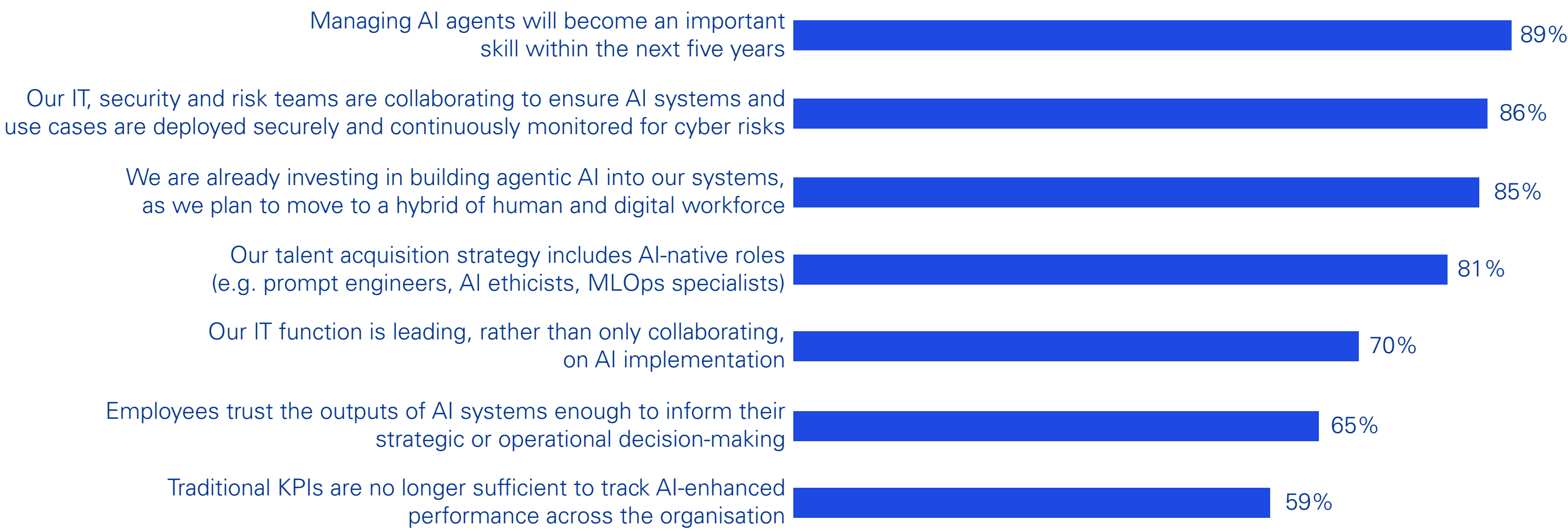
Alongside security, it is also key that uses of AI are ethical and responsible, grounded in the organisation’s business principles. Guardrails like KPMG’s [Trusted AI framework](#) can be a significant enabler in this respect.

Equipping the workforce

As with any emerging technology, there are a number of challenges to overcome. The biggest barriers and risks flagged by executives include cybersecurity, costs and scarcity of resources, skills and talent.

Equipping the workforce to use AI safely and effectively is a key priority. Nearly nine in ten executives (89 percent) agree that managing AI agents will become an important workplace skill in the next five years. A smaller, though significant, proportion of leaders (34 percent) agree that some employees are feeling left behind in the ever-changing tech landscape. Upskilling and support strategies will become an increasingly important element for success in the coming years.

Impact of AI on the workforce



As S Sathish of KPMG in India observes: “To help maximise the return on investment, it’s essential to support the workforce through training and upskilling so that they can confidently embed AI into everyday working. This helps overcome resistance and fear of the unknown. It’s why we are seeing the creation of AI Champions and ‘AI Ninjas’ in functions across the enterprise. Communicate about AI — put it into the open, foster dialogue and discussion. The change management strategy is a critical part of the puzzle.”

Equally significant, a majority of respondents (59 percent) agree that traditional KPIs no longer suffice for tracking AI performance. Much of this challenge comes down to data, which we discuss in the section that follows.

What this implies:

Industrial manufacturers are among the most ambitious of all sectors when it comes to at-scale deployment of AI. That may be a reflection of the multiple use cases for AI in the manufacturing and production environment — although embedding it into actual manufacturing processes remains more tentative due to the high cost of error or breakdown. The combination of AI with other smart technologies is a sweet spot. But engaging factory operators, engineers, back-office staff and business leaders is essential to foster adoption and success.



Optimising the data environment as the platform for digital advancement

Effective data flows are foundational for successful AI and other advanced technologies. However, there are some potentially conflicting signals from this year's research: over four-fifths of executives (83 percent) believe that their organisation is building strong AI data foundations, and the same percentage regard their enterprise data management as good or optimised; but at the same time, three-quarters (76 percent) cite insufficiently reliable data among the top expected AI risks in the next two years.

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83% believe that their organisation is building strong AI data foundations.

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This may indicate a healthy lack of complacency about the task ahead. But it also reveals that, when it comes to data flows across complex and multi-layered organisations like industrial manufacturers, there is no 'end state', with continual improvement and enhancement required.

Data is also key for creating meaningful KPIs against which to track the performance of AI: organisations must have both quality data 'in' and quality data 'out' at the other end.

Data governance and management is a huge topic in itself, with established best practices and disciplines that organisations need to invest in and mature over time. A culture among employees of caring for and appropriately curating data is also critically important.

The emergence of ‘data ontology’

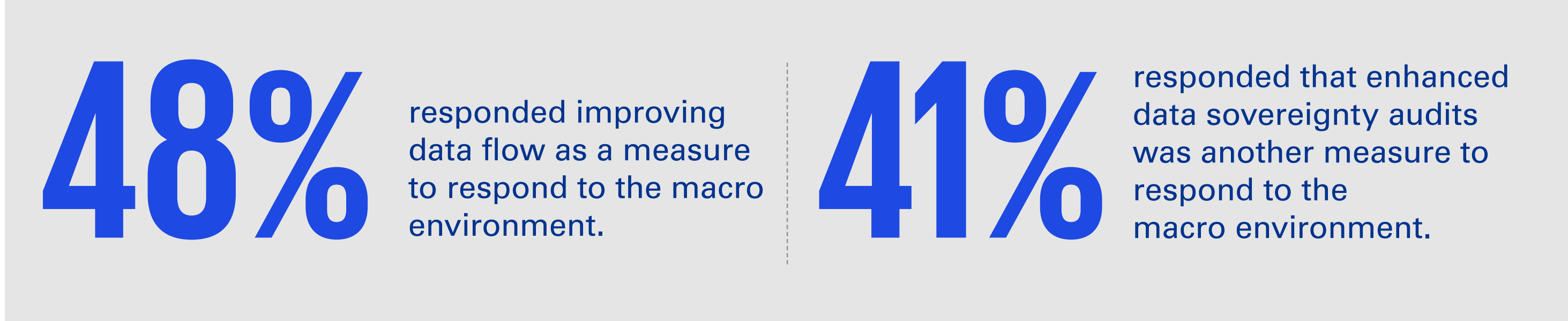
At the same time, new approaches are emerging as Martin Kaestner of KPMG in the US highlights: “Embedding sound data management practices with clear data flows and linkages between layers is foundational for success. However, legacy systems and infrastructure often create a hurdle for data integration, with systems and operating plants not always ‘speaking the same language’. An emerging area that can help here is what we call data ontology. This is an AI-enabled approach that allows businesses — or KPMG on their behalf — to create a network diagram or knowledge graph of the data landscape. This then enables business users to access the specific data they are looking for much more quickly and use the insights from it. It’s like creating a digital twin of your data rather than your physical operations. Data ontology is opening up exciting new possibilities.”

Another impetus behind constantly improving data is the volatile and unpredictable macro environment in which geopolitical risks are rising, necessitating constant attention to supply chain resilience and flexibility. When asked about how they are responding to the macro environment, improving data flows was the most widely named measure (48 percent), while enhanced data sovereignty audits were the third-highest item (41 percent). This shows that data is not only critical as the launchpad for advanced technologies, it is the lifeblood that enables leaders to track operational dependencies across the enterprise and make real-time decisions in response to events.

“In uncertain and rapidly changing conditions, the ability to integrate supply chains effectively — with both suppliers and B2B customers — becomes critical to maintaining stability and value,” says Anamika Gadia, Partner, Deal Advisory, Turnaround & Restructuring and National Leader, Industrial Markets, KPMG in Canada. “This depends on strong, reliable data flows and the integration of advanced technologies such as AI-enabled forecasting, digital twins, autonomous planning and automated quality reviews, which help organisations respond in real time and make confident decisions under pressure.”

What this implies:

The adage of ‘rubbish in, rubbish out’ very much applies here: successful deployment of AI and intelligent technologies is dependent on good-quality data. Leaders in industrial manufacturing should double down on sound data management and governance processes as without this, the hoped-for gains from smart technology are unlikely to be realised. Approaches such as data ontology could provide a bridge into faster and easier access to the data that users need.



Managing risks and cybersecurity for resilience and growth

In an unpredictable landscape of geopolitical, national security and cyber threats, operational resilience and robustness are paramount. In a market of tight margins and elevated costs, no manufacturer can afford to go offline for long.

Investing in cybersecurity is therefore a high priority in the sector, and our research reflects this with half of executives (48 percent) indicating significant expected budget increases for cyber defences in the coming 12 months. Furthermore, in a sign of how critical the cyber dimension is, enhanced cybersecurity was itself cited as one of the biggest benefits of investment in technology (34 percent including it in their top benefits), only ranking behind greater operational efficiency (41 percent).

41%

cited greater operational efficiency as a benefit for investment in technology.

The importance of cybersecurity is also being elevated by the rise of AI. It is widely acknowledged that AI is a ‘double-edged sword’ in security terms: on the one hand, AI tools can be a powerful aid in constantly scanning, predicting and raising threat alerts, but on the other hand, AI also creates highly dangerous (and hard to detect) attack modes for cyber criminals.

“Industrial manufacturing companies have re-recognised that cybersecurity can become a business risk,” says Kenji Masugi of KPMG in Japan. “Companies with many group subsidiaries in particular tend to have increasingly complex systems, so reinforcing security across the group is expected to grow. This is especially true when automating manufacturing facilities and shop floors with new high-tech equipment and connected devices, which introduce new

vulnerabilities and network entry points. The use of edge computing is one way of limiting exposure to the outside world.”

With the cyber war only set to intensify, it is becoming critical to have a centralised security platform — a single source of truth — with advanced AI-enabled monitoring and threat modelling capabilities, together with the ability to react and make executive decisions at speed in a rapidly evolving landscape.

Despite the severity of the consequences of a cyberattack to a manufacturer compared to some other sectors, executives are bullish overall about their ability to operate as resilient businesses. Eighty percent consider their organisation to be resilient to change, and a majority say that they follow ‘zero trust’ security principles at all stages.

“

Industrial manufacturing companies have re-recognised that cybersecurity can become a business risk.”

Kenji Masugi

Partner, Industrial Manufacturing

KPMG in Japan

Managing geopolitical volatility

Nevertheless, with geopolitical instability and indeed military confrontation very much to the fore, industrial manufacturing leaders need to keep a firmer grasp than ever on supply chain resilience as well as factoring in volatility in the price of key commodities such as oil and petrochemicals.

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Given the number of variables changing dynamically, evaluating them manually and taking an informed decision is becoming difficult.

Sari Mackay
Head of Industrial Manufacturing
KPMG in Australia

Sari Mackay, Head of Industrial Manufacturing, KPMG in Australia reflects: “Given the number of variables changing dynamically, evaluating them manually and taking an informed decision is becoming difficult. As a result, we are seeing CEOs and their teams adopting AI to analyse supply chain variabilities using internal and external data, and also leveraging AI as a decision simulator and a support system.”

What this implies:

Industrial manufacturing leaders are prioritising cybersecurity in a threat-laden environment, with half pledging significant increases in cyber investment going forward. Modern cyber defences utilise AI that significantly upgrades their capabilities, but on the other side of the fence, sophisticated AI tools are being used by hackers to launch attacks: a cat and mouse game that no business can afford to let up on. Geopolitical tensions and upheavals only accentuate the need for supply chain resilience and advanced scenario modelling.



Emerging technologies developing across the enterprise

While AI along with data & analytics and cybersecurity are front of mind, other emerging technologies hold huge promise for industrial manufacturers and investment in these is continuing in tandem.

Digital twins, sandboxes, edge computing, modern delivery and XaaS technologies are all on the agenda. Software-driven automation (SDA) is fast emerging, where control functions run as software on virtual machines or edge computers rather than on the physical assets themselves, giving greater hardware freedom and modularity, which is especially useful in handling high-variety and low-volume mixes. The use of advanced materials, rare earths and additive manufacturing is also on the rise, particularly in specialised pockets of aerospace & defence and space.

As noted earlier, many of these hold the greatest potential when implemented in conjunction with AI — running AI’s analytical power across them to generate predictive insights and process enhancements. For example, AI run in conjunction with digital twins can help to model and upgrade operational performance.

But organisations can also make significant progress when moving away from large-scale LLMs in the cloud to smaller more specialised applications that can run on one machine — edge computing — bringing technology closer to production lines and increasing speed and security.

More broadly, the application of next-generation technology could help organisations deal with some of the wider challenges that they face due to demographic and societal issues, as Kenji Masugi of KPMG in Japan reflects: “In the future we will need to address

challenges in the manufacturing production sector, such as labour shortages due to a declining workforce, the transfer of technical skills from experienced workers due to aging, and responding to diverse customer needs with small-lot, multi-product production.”

What this implies:

For industrial manufacturers, the real opportunity lies in how well AI is brought together with a wider set of emerging technologies — not in AI alone. Tools like digital twins, software-driven automation and edge computing are helping organisations build operations that are more flexible, resilient and easier to adapt, especially in complex, high-mix production environments.

By pushing intelligence closer to the shop floor, manufacturers can move faster, improve security and make better decisions in real time, while reducing reliance on rigid, asset-heavy systems. These technologies also offer practical ways to ease workforce pressures — supporting skills transfer, offsetting labour shortages and enabling greater customisation without adding complexity.

Actions for success

To build on momentum and accelerate business enhancements through technology, industrial manufacturing companies can:

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Focus on data foundations

Standardise, connect and govern OT/IT devices data. This is a no-regrets initiative that can be executed in parallel and supports AI use cases, better insights, business efficiencies and compliance. A data foundation-driven digital strategy is the starting point for organisations to implement AI.
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Design for human–AI collaboration

Upskill the workforce and redesign roles so operators, engineers and AI systems work together effectively. Your employees need to have access to AI tools and start experimenting with them to get comfortable and learn AI skills. This is another foundational no-regrets move. Organisations should define To Be Operating models post AI and communicate to operating teams on the new way of working to address insecurity challenges. Some organisations are also identifying AI champions or AI Ninjas who can help in this transition to new ways of working.
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Apply AI to high-value proven use cases

Focus on proven use cases (predictive maintenance, quality inspection, process optimisation) tied directly to overall equipment effectiveness (OEE), yield and cost. This builds early success and confidence. Identify quick-win opportunities for automation/AI applications in non-manufacturing functions such as finance, legal and procurement as well. These measures create organisational readiness and starts the change management process across the business.
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Scale AI via platforms, not pilots

Move from isolated pilots to shared platforms (Databricks, Azure Fabric, etc.) that scale across plants, products and departments.
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Put security at the heart

AI and other new technologies raise new risks. Co-opt a security workstream — together with a trust and ethics lens — into AI development so that efforts are inherently joined up. Rigorously test solutions before go-live and keep humans in the loop to critically assess.
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Drive strategic ecosystem partnerships

Select ecosystem partners with purpose. Move from transactional relationships to strategic co-creation that enhances flexibility, fosters interoperability, accelerates innovation and delivers better customer outcomes. Define guidelines and procedures for working with ecosystem partners to establish the way of working as a part of the new business operating model.
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Upskill the workforce

Engage the workforce and build their skills so that they can confidently engage with AI.

How KPMG can help

KPMG helps industrial manufacturers translate advanced technology into measurable, enterprise-wide value.

KPMG professionals help organisations in moving beyond isolated AI pilots to scalable platforms, prioritising proven use cases such as predictive maintenance, quality optimisation and supply chain resilience. We work with leadership teams to design AI-enabled operating models, redefine value measurement and enable effective collaboration between people and intelligent systems.

Trust and security are embedded from the outset. Through frameworks such as KPMG Trusted AI, KPMG professionals help organisations manage cyber, regulatory and ethical risks as adoption accelerates and technologies scale across the enterprise.

Through KPMG Velocity, our global transformation engine, we combine sector expertise, technology accelerators and ecosystem partners to design, build and scale transformation at speed: <http://kpmg.com/velocity>

Methodology

Survey respondents represented organisations with annual revenues above US\$1 billion and included a diverse group of technology leaders, such as Chief Data Officers, Chief Digital Officers, CIOs, CTOs, CISOs, Chief AI Officers, and others. The industrial manufacturing perspective of the KPMG global tech report 2026 draws on the views of 258 technology leaders from 22 countries and territories from the industrial manufacturing industry — metals and advanced materials (42), other engineering and industrial products (113), space (50), aerospace and defence (53). NOTE: Some figures may not add up to 100 percent due to rounding.

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Martin is a Principal in Advisory in the Industrial Manufacturing, Tech and Data analytics in KPMG in the US. He manages the execution of data and analytics projects and is particularly focused on applying artificial intelligence and advanced analytics to complex business problems to drive business value. With over 25 years of business and system consulting experience, he assists clients in leveraging technology and analytics to gain tangible business improvements. Martin delivers experienced approaches to implement business strategies, manage risk, reduce costs, improve efficiencies and comply with regulations by effectively turning data and analytics into business value.



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S Sathish brings over 27 years of expertise in enhancing EBITDA for clients through various approaches, including procurement cost reduction, digital manufacturing, artificial intelligence, supply chain transformation, operational transformation and sales enhancement. He leads KPMG in India’s Industrial Manufacturing sector and serves on the Global Steering Board. Throughout his career, he has collaborated with over 100 clients across diverse sectors, such as automotive, industrial products, paper, cement, textiles, and emerging industries like solar and wind. His experience also includes driving transformations in numerous promoter-driven businesses, making him a seasoned leader in the industrial sector.



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